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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/532,430 | 04/25/2005 | Kenji Yamane | OGW-0365 | 1792 |

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| EXAMINER |
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MAKI, STEVEN D

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| ART UNIT | PAPER NUMBER |
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1791

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01/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/532,430 | YAMANE, KENJI | |
| | Examiner | Art Unit | |
| | Steven D. Maki | 1791 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

- 1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-29-07 has been entered.
- 2) The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Incorporation of "inclined from 10° to less than 45° with respect to the tire circumferential direction" (claim 1) into the specification.
- 3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 4) Claims 1, 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 lines 13-14, there is no clear antecedent basis for "the longitudinal grooves". In claim 1 lines 13-14, it is suggested to change "the longitudinal grooves" to --the circumferential grooves--.

- 5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

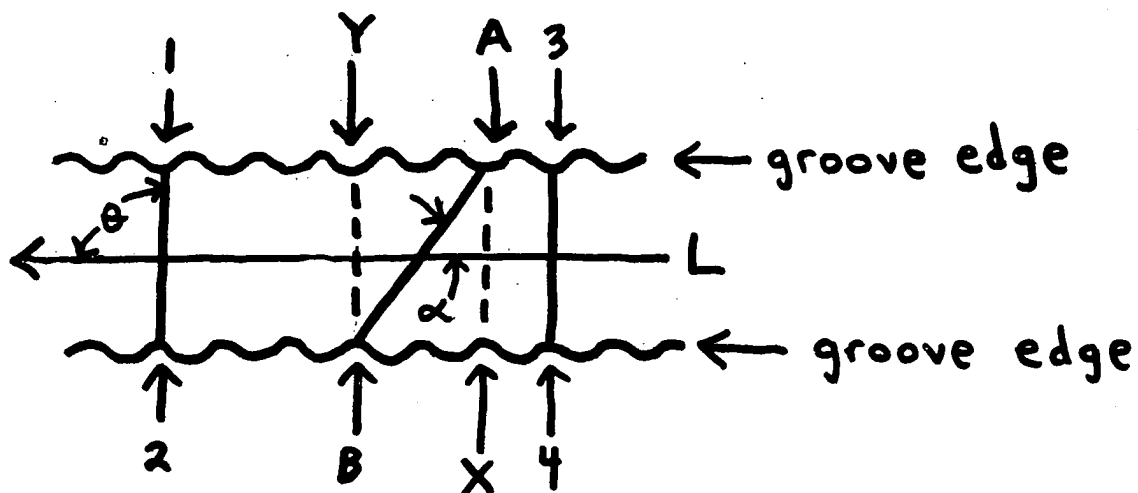
invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6) **Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinen (US 6,415,835) in view of Shesterkin (US 2,268,344) and further in view of Tomioka et al (US 5,211,779) or Williams (US 4,299,264)**

Heinen discloses a pneumatic tire having a tread comprising a circumferential groove 14 for enclosing and channeling water during use of the tire on wet pavement wherein both side surfaces of the groove are provided with peaks and valleys such that each valley extends continuously from one side surface to the other side surface. See abstract. The depth D1 of the peaks and valleys is 5-15% of the groove width.

Preferably, the depth D1 is less than 3 mm. The pitch P1 of the peaks and valleys is less than 40% of the groove width. Preferably, the pitch P1 will be less than 5 mm.

Heinen teaches providing the peaks and valleys on a first side such that they 180 degrees out of phase from the peaks and valleys on the second side surface. Attention is directed to the following figure:



The undulating lines in the above figure represent the edges of a groove at the tread surface. The peaks and valleys at one groove edge are 180 degrees out of phase from the peaks and valleys at the other groove edge. For example, peak 1 is directly opposite peak 2. Another example, peak 3 is directly across from peak 4. A continuous peak can extend from peak 1 to peak 2 along a line inclined at angle θ with respect to the line L (the longitudinal direction of the groove) wherein angle θ is 90 degrees. However, a continuous peak can extend from peak A to peak B along a line inclined at angle α with respect to line L (the longitudinal direction of the groove). This is true even though peak A is directly across from peak X and peak B is directly across from peak Y. The path of a continuous peak from one groove edge to the other groove edge is independent of the phase of the peaks at the tread surface. More importantly, Heinen fails to require peaks and valleys on one side surface to be 180 degrees out of phase from the peaks on the other side surface. In Heinen, the longitudinal direction of groove corresponds to the imaginary line or arc located on the median plane within the depth of the groove wherein the median plane bisects the channel formed by the respective surfaces of the groove. See col. 5 lines 59-67. Heinen teaches that the peaks and valleys follow imaginary lines that are skewed with respect to the median plane line or arc at 45 to 90 degrees. See col. 6 lines 1-4. Heinen teaches that the lines are skewed at 90 degrees in the preferred embodiment, which is illustrated in figure 7. See col. 4 lines 28-29, col. 6 lines 4-7. With respect to this skewing at an angle of 45-90 degrees, Heinen explains:

This angle measured by transposing each line or arc into the same plane and measuring the angle at the intersection of the respective lines.

See col. 6 lines 7-9 (emphasis added). When applicant created figure 3 of the original disclosure, applicant transposed the line followed by the ridges or peaks 4 into the same plane (the tread surface) in order to measure angle alpha. Heinen's angle of 45-90 degrees at which the peaks and valleys may be skewed directly corresponds to the angle alpha indicated in figure 3. Thus, Heinen discloses an angle of 45 to 90 degrees. Heinen does not recite an angle of "10 degrees to less than 45 degrees".

As to claim 1, it would have been obvious to one of ordinary skill in the art to orient the peaks and valleys ("line portions") in Heinen's circumferential groove such that the peaks and valleys are inclined at an angle "from 10° to less than 45° with respect to the tire circumferential direction" such as 44.9 degrees since (1) Heinen, directed to a pneumatic tire having grooves with peaks and valleys, suggests inclining the valleys at an angle of 45-90 degrees with respect to the median plane of the groove extending in the longitudinal direction to reduce skin friction drag along the groove surface and increase the flow of water from the groove and (2) Shesterkin, directed to a pneumatic tire having grooves with peaks and valleys, teaches forming ridges ("peaks") at the bottom of circumferential grooves such that they are inclined at an angle of at least 20 degrees (e.g. an angle of the order to 45 degrees or an angle of 90 degrees) with respect to the longitudinal direction of the grooves to deviate the course of cracks or reduce the number of cracks. The Federal Circuit has stated: "... our case law does not require that a particular combination must be the preferred, or most desirable,

combination described in the prior art in order to provide motivation for the current invention." In re Fulton 73 USPQ2D 1141, 1146 (Fed. Cir. 2004). Heinen does not teach that angles less than 45 degrees are undesirable and, therefore, does not teach away. When the applied prior art to Heinen and Shesterkin is considered as a whole, one of ordinary skill in the art would have readily appreciated that the angle of Heinen's valleys may be inclined at an angle less than 45 degrees. The expected benefits of inclining Heinen's valleys at an angle of less than 45 degrees include increased flow of water from the groove (Heinen) and reduced cracking (Shesterkin).

With respect to "wherein the line portions are provided in a range of not less than 50% of the wall face of the circumferential grooves in a cross section of the longitudinal grooves [the circumferential grooves] orthogonal to the groove longitudinal direction" (claim 1), Heinen discloses 100% of the wall face of the groove being provided with the grooves and valleys. See figure 7.

With respect to lateral grooves (claim 1), it would have been obvious to one of ordinary skill in the art to use Heinen's peaks and valleys in a tread having circumferential grooves and lateral grooves extending away from the tread surface circumferential center (tire equator) wherein the distal ends of the lateral grooves are open in view of (1) Heinen's teaching to use the peaks and valleys in a groove, which may extend circumferentially or laterally, to decrease friction drag and thereby increase flow of water from the groove (col. 2 lines 66-67, col. 3 lines 1-25, 47-52, col. 4 lines 52-60) and (2) it is well known in the tire tread art to form a tire tread with circumferential grooves and lateral grooves having open distal ends to improve water drainage as

evidenced by Tomioka et al (figure 2, figure 3) or Williams (figure 2, figure 5). Thus, Tomioka et al or Williams motivate one of ordinary skill in the art to use such lateral grooves in Heinen's tread in order to improve drainage of water from the tread.

As to claim 3, it would have been obvious to one of ordinary skill in the art to provide the peaks and valleys with a height of not smaller than 0.3 mm and not more than 20% of each of a width and depth of the groove in view of Heinen's teaching to provide the peaks and valleys with a depth D1 of 5-15% of the groove width / less than 3 mm and a pitch P1 less than 40% of the groove width / less than 5 mm.

As to claim 4, Heinen teaches a pitch P1 of less than 5 mm which overlaps the claimed range of 1.5 to 8.0 mm.

Remarks

7) Applicant's arguments with respect to claims 1, 3 and 4 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the line portions of the present invention create spiral or vortex in the water flowing through the grooves, thereby accelerating water flow to obtain a larger amount of water discharged from the grooves. This "unexpected results" argument is not persuasive because (1) the claimed invention has not been compared to Heinen, which teaches that the peaks and valleys increase the amount of water ejected from the groove to increase wet traction and (2) Tomioka / Williams suggest using lateral grooves to improve water drainage from a tire tread. No unexpected results over the applied prior art has been shown.

8) No claim is allowed.

Application/Control Number:
10/532,430
Art Unit: 1791

Page 8

9) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Maki
January 5, 2008


STEVEN D. MAKI 1-5-08
PRIMARY EXAMINER